NEW BODIPY DYADS FOR TWO-PHOTONS FLUORESCENCE IMAGING IN CELLS

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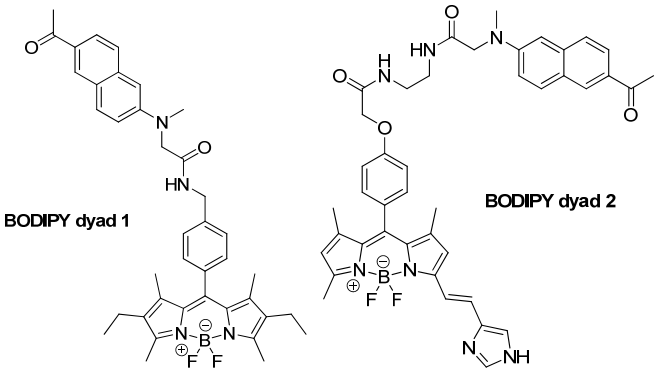
Fluorescent probes are essential tools for studying biological systems. The last decade has witnessed particular interest in the development of two-photon excitable probes, due to their advantageous features in tissue imaging compared to the corresponding one-photon probes [1]. Recently, we have designed and synthetized an aminonaphthalimide–BODIPY derivative as energy transfer cassettes and were found to show very fast and efficient BODIPY fluorescence sensitization [2]. This was observed upon one- and two-photon excitation, which extends the application range of the investigated bichromophoric dyads in terms of accessible excitation wavelengths. In order to increase the two-photon absorption of the system aminonaphthalimide fluorophore was replace with a Prodan analog (BODIPY dyad 1), which presents found a variety of applications as probes and labels in biology [3]. The two-photon absorption cross-section δ of the dyads is significantly incremented by the presence of the 6-acetyl-2-naphthylamine donor group.



The emission maximum of a BODIPY fluorophore can significantly be red-shifted in comparison to their precursors by conjugation with aromatic aldehydes. [4] We use a synthetic strategy to obtain BODIPY dyad 2 that incorporates an imidazole ring. This molecule can be used in biological media as a near-neutral pH indicator based on one- and two-photon excitable BODIPY acceptor.

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